The Veterinary Journal 191 (2012) 151–160

Contents lists available at ScienceDirect

The Veterinary Journal

journal homepage: www.elsevier.com/locate/tvjl

Review

Participatory epidemiology: Approaches, methods, experiences

Andrew Catley [a,*], Robyn G. Alders [b], James L.N. Wood [c]

[a] Feinstein International Center, Tufts University, P.O. Box 1078, Addis Ababa, Ethiopia
[b] Cummings School of Veterinary Medicine, Tufts University, 200 Westboro Road, Grafton, MA 01536, USA
[c] Department of Veterinary Medicine, Cambridge University Veterinary School, Madingley Road, Cambridge CB3 0ES, UK

ARTICLE INFO

Article history:
Accepted 11 March 2011

Keywords:
Participatory epidemiology
Participatory approach
Participatory methods
Disease control

ABSTRACT

Participatory epidemiology (PE) is an evolving branch of veterinary epidemiology which uses a combination of practitioner communication skills and participatory methods to improve the involvement of animal keepers in the analysis of animal disease problems, and the design, implementation and evaluation of disease control programmes and policies. This review describes the origins of PE and how the application of PE requires attention to both a participatory approach and participatory methods, supported by triangulation of data with conventional veterinary diagnostic methods.

The review summarizes the various adaptations and uses of PE, including the design of primary veterinary service delivery systems, veterinary research and disease surveillance. In contrast to conventional data collection methods, an integral aspect PE is the concept of applying and evaluating new disease control programmes or surveillance systems in partnership with animal owners. In the developing regions where PE has been most commonly used, this action-orientated approach raises important challenges for veterinary institutions with limited financial resources. Information derived from PE studies can also question longstanding disease control policies and norms, nationally and internationally.

Introduction

In the early 1970s it became evident that formal data collection methods were not well-suited for the design of rural development programmes in less developed countries (Chambers, 1983). As a result, alternative systems of inquiry and learning began to evolve, leading to the development of Participatory Rural Appraisal (PRA) as a multidisciplinary approach, with the emphasis on local analysis and action with communities (Chambers, 1994). Veterinarians began using participatory methods in the 1980s (Leyland, 1991), particularly in community-based livestock projects in Africa and Asia. By the late 1990s there was increasing use of the methods (Catley, 2000; Alders and Spradbrow, 2001) and the term 'participatory epidemiology' (PE) became more commonly used to describe veterinary applications of PRA-type approaches and methods. However, whereas PRA was a multidisciplinary approach to various development problems in rural communities, PE evolved with a focus on livestock diseases.

Although much of the early development of PE occurred in remote and conflict-affected pastoralist areas of the Horn of Africa, the last 10 years has seen considerable growth in veterinary uses of participatory methods in other regions. A search of the Commonwealth Agriculture Bureau Abstracts database using the term 'participatory and epidemiology' in April 2010 produced nine papers for the period before 2000, and 77 papers for the period 2001–2010.

This review explains the origins of PE, offers a working definition, and describes how PE has been adapted for different uses. We examine some of the strengths and weaknesses of PE, and suggest options for ensuring the quality of PE. The manuscript does not cover the uses of participatory approaches and methods in livestock production and research, although a substantial literature is also now available in this area (see, for example, Conroy, 2005).

A working definition of 'participatory epidemiology'

Participatory epidemiology is the systematic use of participatory approaches and methods to improve understanding of diseases and options for animal disease control. This definition refers to both a 'participatory approach' and 'participatory methods', indicating that an understanding of both approach and methods are needed to define PE. We propose that the term 'participatory' in PE is used to refer to the essential involvement of communities in defining and prioritizing veterinary-related problems, and in the development of solutions to service delivery, disease control or surveillance. As we explain later in the review, use of the term PE that does not involve communities in these ways is considered to be a misnomer.

* Corresponding author. Tel.: +251 911 366189.
E-mail address: andrew.catley@tufts.edu (A. Catley).

1090-0233/$ - see front matter © 2011 Elsevier Ltd. All rights reserved.
doi:10.1016/j.tvjl.2011.03.010

What is a 'participatory approach'?

An important concept behind the development of PRA was that professionals needed to change their attitudes and behaviour when working with poor people in developing countries. The need for attitudinal change emerged from distinct disciplines and movements, but according to Chambers (1994), an important influence was the Adult Education Movement (Friere, 1968) and a realization that despite limited formal education, poor people were able to conduct their own investigations and analyses, and could design, plan and enact initiatives to solve local problems. During this process the role of the typical educator was changed to facilitate applied research and learning among co-learners, rather than prescriptive instruction.

From the 1980s, social scientists became more involved in international development, especially agricultural research and human health projects. Research on these projects led development professionals to understand better that rural people had their own complex knowledge which had developed over many years, according to local environmental and socio-cultural conditions. This research challenged conventional development approaches, in which modern technologies were viewed as superior to local know-how. The term 'indigenous technical knowledge' became popular in research and development organizations, as a research subject but also as a means to use local knowledge and experimentation in the design of development projects (Brokensha et al., 1980). In terms of a participatory approach, attention to indigenous knowledge required professionals to acknowledge that rural people were not ignorant and could make important intellectual contributions to development.

A third importance influence on the emergence of participatory approaches was agroecosystem analysis in the early 1980s. This was a systems-based, multi-disciplinary and largely qualitative approach which allowed farmers to become directly involved in local, context-specific research and analysis. It assumed that within a given agroecological system, a few strategic management changes could produce substantial improvements to the system as a whole (Conway, 1985). Furthermore, the required changes could be identified rapidly without a detailed quantitative description of every element of the system.

A participatory approach was often explained by reference to 'top-down' vs. 'bottom-up' development. The former referred to the design of development projects solely by professionals and academics, with no local consultation and consequently, limited local interest or commitment to support or sustain project activities. In contrast, bottom-up development was viewed as participatory and required joint analysis, planning and monitoring with local people. From the mid-1970s, community participation became central to the development strategies of international aid donors and non-governmental organizations (NGOs). However, community participation and participatory approaches were subject to mixed interpretations and uses, with implications in terms of the effectiveness of projects and the extent to which benefits were sustained (Pretty, 1995; Rifkin, 1996). It became evident that the term 'community participation' was used to describe diverse processes, which included the use of communities simply to provide information to outsiders to meet project objectives, which were defined externally.

Several years before the emergence of PE, veterinarians and social scientists began to use participatory approaches in two related areas. First, the early development of community-based animal health worker (CAHW) systems in India (Hadrill, 1989), Afghanistan (Leyland, 1992) and Africa (Maranga, 1992; Leyland, 1996) was based on participatory inquiry with livestock keepers. Second, research on 'ethnoveterinary knowledge' became popular (Mathias-Mundy and McCorkle, 1989) as a means to document local understanding of livestock and wildlife diseases, and related terminology. However, as community-based, participatory approaches became more widely applied, diversity in interpretations and uses followed a similar pattern to that reported in rural development and health projects. We discuss the implications of these mixed interpretations and uses of PE by veterinarians and researchers later in the review.

Participatory methods

Types of participatory methods

Participatory methods evolved mainly from social sciences, especially social and medical anthropology, and agroecosystem analysis. From social anthropology came various informal interviewing methods, such as group interviews and semi-structured interviews (SSI). Rather than using structured, pre-set questions as in a questionnaire, a SSI was more like a guided conversation (Slim and Thomson, 1994; Pretty et al., 1995). With a mental note of the key research themes, the interviewer could phrase and rephrase questions, and follow-up interesting and unexpected responses. The use of open rather than closed questions was central to the method.

Visualization methods, derived from approaches such as agroecosystem analysis (Conway, 1985), were a second important

Table 1
Types of veterinary information collected using participatory epidemiology methods.

Method	Information
Informal interviews	
Semi-structured interviews	Used in most PE studies and in combination with visualization, and ranking and scoring methods; also used as a stand-alone method (Mariner and Roeder, 2003; Bagnol, 2007; Ahlers et al., 2009)
Time-line	History and timing of disease events (Admassu, 2005; Bagnol, 2007; Ahlers et al., 2009)
Visualization methods	
Participatory mapping	Livestock movements with respect to the location of grazing areas and water points (Hadrill and Yusuf, 1994); spatial exposure to disease vectors (Catley, 2004)
Seasonal calendars	Seasonal variation in disease incidence (Catley et al., 2002a); seasonal variation in human livelihoods e.g. consumption of livestock products and livestock trade (Bagnol, 2007; Ahlers et al., 2009; Barasa et al., 2008); seasonal variation in contact with disease vectors, neighbouring livestock and wildlife (Catley et al., 2002a); seasonal variation in vector populations (Catley and Aden, 1996)
Proportional piling[a]	Age structure of livestock herds (Barasa et al., 2008); disease incidence and mortality estimates by age group (Rufael et al., 2008); impact of vaccination on livestock mortality (Catley et al., 2009); case fatality rates (Bekele and Akuma, 2009)
Radar diagrams	Analysis of disease control strategies (Grace, 2003)
Ranking and scoring	
Simple ranking	Analysis of disease control strategies (Grace, 2003)
Simple scoring	Prioritization of livestock diseases (Bedelian et al., 2007)
Matrix ranking	Analysis of disease control options (Catley et al., 2002a)
Matrix scoring	Local characterization of the clinical signs and causes of disease (Catley and Mohammed, 1996; Shiferaw et al., 2010); local characterization of disease vectors (Catley and Aden, 1996); comparison of clinical diagnoses of livestock keepers and veterinarians (Catley, 2006); analysis of veterinary service providers (Admassu et al., 2005)
Before-and-after scoring	Impact of veterinary services on the livelihoods impact of diseases (Admassu et al., 2005)

[a] Proportional piling is a visualization method but the results are recorded numerically.